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ABSTRACT

At the University of Victoria (British Columbia), computer mediated communications have been used since 1988 in the delivery of distance education in the Certificate Program in Computer Based Information Systems. From 1988 to 1990, a university mainframe computer was used as the host for communications, but since 1990, the host has been a personal computer (PC) based electronic bulletin board system (BBS) operated by program staff. These two methods of using computer-mediated communications are compared and contrasted from the perspectives of data communications procedures, technical support required, usage, costs, and reactions of students. BBS usage was analyzed by studying the experiences of 21 students in a version of the course. Experience with the earlier system was described by staff participants. Students found the BBS easy to use and easy to learn. The instructor found it to be a good vehicle for broadcasting information. Help-desk functions were used much less often with the BBS than with the mainframe system, and installation of the system was easy and efficient. While the BBS does not meet every need of the distance education class, it represents an improvement over the mainframe system and will serve until an improved method is developed. (SLD)

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A COMPARISON OF MAINFRAME AND PERSONAL COMPUTER BASED BULLETIN BOARD SYSTEMS FOR COMPUTER-MEDIATED COMMUNICATIONS IN DISTANCE EDUCATION COURSES

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Computer-mediated communications have been used by several institutions as an aid in the delivery of distance-education courses (Wells, 1992). At the University of Victoria, computer-mediated communications have been used since 1988 in the distance-education delivery of the Certificate Program in Computer Based Information Systems (CBIS) offered through the Division of University Extension. From 1988 to 1990, a university mainframe computer was used as the host for computer-mediated communications. Since fall 1990, however, the host has been a PC-based electronic bulletin board system (BBS) operated by CBIS staff. This paper compares and contrasts these two different methods of using computer-mediated communications from the perspectives of data communications procedures, technical support required, usage, costs, and reactions of students, instructor and marker, and administrators; discusses briefly the ease with which a personal-computer based BBS can be purchased and installed; and concludes with comments about future directions.

BACKGROUND

CBIS offers education in computer technology, systems design, and management issues. The program is designed to enable professionals and managers become highly educated users of computer systems. The whole program (nine courses plus a final project) is available both on-campus and through distance-education across Canada and internationally.

In 1988, an existing CBIS distance-education course, *Computing Tools for Management*, was offered for the first time with a computer-mediated communications component (in addition to the extensive print package, videos, computer software, and tutorial support by telephone and mail) to 24 students using modems to connect via DATAPAC to the university's mainframe. Complete statistics were kept on the computer-mediated communication usage and key findings were reported at a Conference on Computer-Mediated Communications in Distance Education at the Open University (UK) in 1988 and subsequently published (Muzio, 1989).

Several problems were discovered with this method of computer-mediated communication, both in this original course offering and in subsequent distance-education offerings of other CBIS courses including: high DATAPAC charges to the CBIS program; seemingly random changes to the University mainframe system being made by the computing user services department; excessive staff time in operating a help-desk function; and lack of user-friendliness for the students.

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In fall 1990, the decision was made to eliminate the mainframe completely and to switch to a PC-based electronic bulletin board system (BBS). The Major BBS by Galacticomm of Fort Lauderdale, Florida was purchased and installed on an IBM XT personal computer located in the CBIS offices in 1990. A completely new version of the course, *Forecasting and Control for Management*, offered from April to July 1992 to 21 students, was chosen for complete analysis of BBS usage.

DATA COMMUNICATIONS PROCEDURES

In both methods, students needed an IBM PC or compatible and a modem. CBIS provided Gandalf series 24A modems free in the fall of 1988 and for a modest rental fee subsequently if needed. In 1988 approximately 40% of students required a CBIS modem. By 1992 ninety percent of students have their own modems. This figure compares very favourably with the low 28% modem access for correspondence students found for NKI's EKKO students (Rekkedal, 1990) and the 33% in the AU study (Conway, 1991).

In order to communicate with either host, Kermit, a free communications software package, and public phone lines were used. Students accessed the mainframe either by dialling the mainframe modem directly, if they lived in Victoria, or by using BC Tel's DATAPAC packet switched network by dialling the 1200 bits per second public dial port closest to their location. Once connected to the mainframe, students used MAIL (developed by Rice University, Houston, Texas) for electronic mail and Kermit-CMS in conjunction with Kermit-MS for transferring files to and from their PCs.

For the BBS system, students dial directly into the BBS using one of the two phone numbers corresponding to the two dedicated phone lines for the system (eight dedicated lines are allowed by Major; two have so far proved sufficient). Students can then use the BBS for individual e-mail and for reading through the comments posted in the special interest group (SIG) pertaining to the course, or any other SIG to which they have been given access. Like the mainframe , the Major BBS system is in operation twenty-four hours a day, seven days a week.

TECHNICAL SUPPORT REQUIRED

Moving to the BBS has saved a considerable amount of CBIS staff time in providing technical support. In the 1988 course (Muzio, 1989) approximately 160 hours were spent, by the course administrators, in operating a help-desk function. Although some student technical problems may have been caused by student unfamiliarity with computer-mediated communications, the vast majority of the time was spent on student hardware problems (incompatibility of equipment), and students' inability to establish contact with the University's mainframe (caused by malfunctioning of the DATAPAC system or by computer user services changing mainframe access protocols without any notification to CBIS staff). Although the help-desk time required diminished somewhat with subsequent mainframe computer-mediated communications, too much staff time was still taken up trying to solve problems that were outside their own control.

By comparison, approximately only five hours total was spent on the technical help-desk function for the *Forecasting and Control for Management* course using the BBS system as host. This is not the result of increased student computer

fluency; for all but two of the students the *Forecasting* course was their first experience of computer-mediated communications.

The BBS certainly seems the easier system from a technical standpoint for the students. Apart from the reduced time spent on the help-desk function, only 4.8% of the BBS messages related to technical issues, as compared with 10.5% for the 1988 mainframe-based course.

USAGE

In the *Forecasting* course 229 messages were logged during the three-month course. At first glance this seems considerably fewer than the 571 messages recorded in 1988. However, in the 571 figure, a message sent to all students was counted once for each student that read the message. Using the same counting scheme for the BBS course, the total of messages is 920.

Of these 229 messages, 105 were sent by the course instructor, 19 by the system operator (SYSOP), 14 by the other course administrators or course marker, and 91 by students. An average of 46.75 messages were received by each student (counting all the messages sent to the whole class) and an average of 4.6 messages were sent by each student. 48% of all messages were replies to previous messages. As many students also browsed on the system, reading communications, other than private messages, between other students and the instructor the total message count is not directly comparable with the 1988 course. Although using the BBS was not compulsory, it was the vehicle for posting course errata (numerous in this re-written course) and helpful hints or elucidation about course content and assignments. Moreover, the students did not have to use the system to send biographical details or to upload data files as had happened in the previous course so all the traffic was of the question and answer variety.

An interesting change from the 1988 course is that 55% (that is, 50 out of 91) of student messages related to content or assignments compared to three messages only in the 1988 course.

COSTS

In the 1988 pilot course, all DATAPAC and mainframe usage fees were borne by the CBIS program. In subsequent mainframe-based courses, students were assessed a $50 e-mail usage fee which was meant to cover both these costs. However, the average per student cost, as billed to CBIS, was $127. CBIS, operating on a cost recovery basis, could not afford this level of subsidization.

In the BBS system, the mainframe usage charges disappear and the DATAPAC charges for connect time and PAD time are replaced solely by long-distance telephone charges, paid by the students. Surprisingly very few students have complained about this cost, although one student has commented that his phone bill averaged $125 per month for the three-month course. Most students learned to be judicious in their use of the system, by making connections during low-cost telephone times (between 11 p.m. and 8 a.m.), and by minimizing connect time by downloading all messages to their PCs and reading them later at their PCs when not connected and by composing messages off-line and sending them later as files.

The costs of set-up for CBIS were minimal. The IBM XT which acts as the BBS host, was already surplus to needs and outdated for other computing uses. The Major BBS itself cost less than $150 to purchase and install. There have been no maintenance costs in almost two years of operation.

FINDINGS

Whereas in the mainframe computer-mediated communication method, students complained that they spent considerable time learning to use e-mail and file transfer, in the BBS system, they found the procedure straightforward and easy to learn. The BBS instructions written by CBIS staff on how to access and use the system must have been clear and straightforward to follow as no complaints were received.

The Major BBS is certainly user-friendly; accessing the system is straightforward and the menu system makes it easy to move through the various options.

Some students have commented that Kermit lacks functionalities found in other communications packages. CBIS does not insist that Kermit be used; however, it is free and it is supported by the University's computer user services.

For the instructor, the BBS system was a good vehicle for broadcasting course errata to the class (except two students who were phoned by the course administrators as, being in prison, were denied the use of a modem). His logs of each BBS session will be an invaluable tool for improving the print package.

The administrators found that the help-desk function almost disappeared. The BBS SYSOP spent about half an hour every day checking the BBS activity and dealing with any pressing problems identified by students, the course instructor or the marker and relaying any messages to the two incarcerated students.

Bypassing the mainframe has many advantages for CBIS administrators. Firstly, CBIS now controls the hardware and software. We know if any changes have been made to the system that necessitate sending information to the students; this does not always happen when relying on another department. Secondly, as the IBM XT on which the BBS is resident is visible to all CBIS staff, it is obvious at once if there are any system failures.

Installation of the Major BBS was remarkably easy, merely two hours of a technician's time to install and configure the software. Documentation provided with the system has been sufficient to enable CBIS staff to perform any trouble-shooting (which has been minimal). This should be encouraging to other institutions considering using a PC-based BBS for computer-mediated communications.

THE FUTURE

On the downside, the Major BBS does not meet all our needs. Real-time conferencing cannot occur (however, we may never wish to do this because of the connect costs this would incur for the students). There are noticeable delays on the operator's console between completing a task such as typing a message and

receiving the prompt for choosing another prompt from the menu. This delay is more pronounced for students operating at a distance. This could be improved by running the BBS on a faster machine and with modems operating at faster baud rates (many students are still using 1200 or 2400 baud).

From an instructional perspective, a message cannot be sent to a selected group of users. Either a message is posted in the SIG for all interested students to see, or private message is sent to an individual student.

Some administrative tasks are very tedious for the SYSOP. For example, in order to allocate accounts on the system, the SYSOP has to actually log on as each individual student, one at a time. The Major BBS has no facility for adding a whole class of users.

In spite of these minor problems with the current BBS, we will continue to use it while continuing the search for a better BBS or for a different method of using computer-mediated communication. The aim is to offer the best solution to our students at a low cost.

BIBLIOGRAPHY

Conway, C. 1991. Computer Use, Attitudes and Ownership Among AU Students; Implications for Computer-mediated Course Delivery. Athabasca, Alberta: Athabasca University.

Rekkedal, T. 1990. "Recruitment and Study Barriers in the Electronic Cottage." In The Electronic College: Selected Articles From the EKKO Project, eds. M.F.Paulsen and T. Rekkedal, 79-105. Bekkestua, Norway: NKI.

Muzio, J.A. 1989. "Email and Electronic Transfer of Data Files for a Distance Education Course." In Mindweave: Communication, Computers, and Distance Education, eds. R. Mason and A. Kaye, 198-201. Oxford: Pergamon Press.

Wells, R. 1992. Computer-Mediated Communication for Distance Education: An International Review of Design, Teaching, and Institutional Issues. Pennsylvania State University, PA: The American Center for the Study of Distance Education.